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Wigboldus, D.H.J.; Semin, G.R.; Spears, R.

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How Do We Communicate Stereotypes? Linguistic Bases and Inferential Consequences

Daniël H. J. Wigboldus and Gün R. Semin
Free University Amsterdam

Russell Spears
University of Amsterdam

The linguistic expectancy bias is defined as the tendency to describe expectancy-consistent information at a higher level of abstraction than expectancy-inconsistent information. The communicative consequences of this bias were examined in 3 experiments. Analyses of judgments that recipients made on the basis of linguistically biased information generated by transmitters indicated that behavior in expectancy-consistent messages was attributed more to dispositional and less to situational factors than behavior in expectancy-inconsistent messages. Moreover, this effect was mediated by the level of linguistic abstraction of the messages. These findings provide direct evidence for the hypothesis that recipients are sensitive to variations in linguistic abstraction in spontaneous language use because of stereotypes. Results are discussed with respect to the interpersonal aspects of stereotyping.

Most people are familiar with the party game of how a piece of information whispered down a line of people gets distorted in the process. What starts off as "Jack gave Mary a kiss" often ends up as "Jack and Mary are getting married"; if the chain is long enough, then they may even be getting divorced. This party game is, of course, also a well-established research finding, namely: Information undergoes considerable change in the process of being communicated from one person to another (e.g., Bartlett, 1932; Fiedler, Semin, & Bolten, 1989; Gilovich, 1987). Both the form as well as the content of a message may change dramatically. In most cases, this process of communicative erosion need not be harmful and may sometimes even facilitate mutual understanding (Grice, 1975). The argument that we advance suggests that the communication of stereotype-related information may manifest subtle and systematic linguistic biases that have the effect of transmitting and maintaining stereotypes in recipients of such messages. The three studies reported here address how stereotype-related events are represented in language and the impact of such representations on the recipients of such messages.

The current focus on the linguistic structure of stereotype-related messages and, in particular, their impact on recipients presents a novel perspective on social psychological research into stereotyping. The predominant focus regards stereotyping as a process that takes place within individuals (cf. Hamilton, 1981, and Stangor & Schaller, 1996). In contrast to the considerable advances achieved by such an intraindividual approach, there has been very little research on the interindividual processes of stereotyping (Hamilton, Gibbons, Stroessner, & Sherman, 1992; Maass & Arcuri, 1996). After all, stereotypes not only involve intrapersonal processes but also serve social purposes. They are communicated, maintained, and transmitted between individuals. For instance, educators have been shown to influence the stereotypical views of their pupils (e.g., Stephan & Stephan, 1984), parents to influence those of their children (e.g., Epstein & Komorita, 1966; Fagot, Leinbach, & O'Boyle, 1992), and the mass media to influence those of their recipients (e.g., Van Dijk, 1984, 1987). Thus, "stereotyped information can be learned either through individual instances of a category or through summary information that describes a group provided by socializing agents" (Park & Hastie, 1987, p. 629). The latter process is the central focus of this article.

The research conducted by Anne Maass and colleagues on the *linguistic intergroup bias* (LIB) constitutes a major step toward understanding the interpersonal aspects of stereotyping (Maass, Ceccarelli, & Rudin, 1996; Maass, Milesi, Zabbini, & Stahlberg, 1995; Maass, Salvi, Arcuri, & Semin, 1989). This research has

Daniël H. J. Wigboldus and Gün R. Semin, Department of Social Psychology, Free University Amsterdam, Amsterdam, the Netherlands; Russell Spears, Department of Social Psychology, University of Amsterdam, Amsterdam, the Netherlands.

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Correspondence concerning this article should be addressed to Daniel H. J. Wigboldus, who is now at the Department of Social Psychology, University of Nijmegen, P.O. Box 9104, 6500 HE Nijmegen, the Netherlands. Electronic mail may be sent to d.wigboldus@psych.kun.nl. After March 1, 2000, correspondence should be addressed to Daniel H. J. Wigboldus, Department of Social Psychology, Free University Amsterdam, van der Boechorststraat 1, 1081 BT Amsterdam, the Netherlands. Electronic mail may be sent to d.wigboldus@psy.vu.nl.

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shown that there are subtle and systematic differences in the linguistic representation of social events as a function of the group membership (a) of the communicator and (b) of the actor or target of a social event. The obvious implication is that such linguistic biases must play a significant role in the transmission and maintenance of stereotypical images. For instance, such messages should lead to a biased perception in recipients and be responsible for the transmission and maintenance of stereotypes. However, such interindividual implications have as yet not been demonstrated. The chief goal of this research was to study the interindividual process of stereotype transmission by examining the communicative interpersonal consequences of this linguistic bias.

The LIB

In its original form (Maass et al., 1989), the LIB refers to the finding that an in-group member engaging in desirable behavior and an out-group member engaging in undesirable behavior are described at a relatively high level of linguistic abstraction (e.g., "The in-group member is helpful" and "The out-group member is aggressive"). In contrast, an in-group member engaging in the same undesirable behavior and an out-group member engaging in the same desirable behavior are described at a relatively low level of linguistic abstraction (e.g., "The in-group member pushes someone" and "The out-group member opens the door for someone").

The linguistic representation of the very same desirable or undesirable behavior more concretely or abstractly conveys different implicit meanings. For instance, relative to concrete descriptions, abstract descriptions have been shown to lead to generalizations about the targets of such messages. Abstract representations give more information about the properties of a person and less information about the properties of the situation (Maass et al., 1989, Experiment 3; Semin & Fiedler, 1988, 1992). In contrast, concrete messages lead to a particularization of the event. Thus, the examples given above imply that desirable behavior is typical for an in-group member whereas undesirable behavior is typical for an out-group member. It is in this way that language use has been shown to contribute in a subtle but powerful way to the representation of stereotypes and positive in-group and negative out-group perceptions.

Two distinctive mechanisms are assumed to underlie the LIB (Maass et al., 1995, 1996). The first relies on in-group protective motives (Maass et al., 1996). Evidence for the LIB has been found predominantly in intergroup settings in which the in-group identity is severely threatened (Maass et al., 1996), such as the Palio races in Sienna, Italy (Maass et al., 1989). In line with social identity theory (Tajfel & Turner, 1979, 1986), it is argued that when an in-group is threatened, the LIB serves to maintain a positive in-group image even in the light of disconfirming evidence. The second proposed mechanism for this bias is a cognitive one (Maass et al., 1995, 1996). Maass et al. (1995) argued and found strong evidence that, in general, expectancy-consistent behaviors are described at a higher level of abstraction than expectancy-inconsistent behaviors. After all, by definition, expected information is more stable, typical, and diagnostic than unexpected information and therefore is more appropriately represented in abstract terms.

In line with the assumption that expectancy-consistent behavior is generally described at a higher level of abstraction than expectancy-inconsistent behavior, Maass and colleagues have demonstrated that targets behaving in a stereotype-consistent way are described at a higher level of abstraction than targets behaving in a stereotype-inconsistent way (Maass et al., 1995, 1996). Additionally, they have shown that this mechanism operates not only in intergroup contexts but also at an individual level (Maass et al., 1995, Experiment 3). That is, expected behavior of a specific individual is also described at a higher level of abstraction than unexpected behavior. Whereas the original LIB refers to a bias based on differences in linguistic abstraction attributable to the desirability of behaviors performed by in-group versus out-group members, the expectation-based account is about a more general phenomenon. This phenomenon operates not only in intergroup settings but also outside a specific intergroup context. We propose to refer to this phenomenon as the *linguistic expectancy bias* (LEB). The LEB thus describes the finding that expectancy-consistent behavior is described at a higher level of abstraction than expectancy-inconsistent behavior.

So far, strong support for the occurrence of the LEB and its in-group protective counterpart, the LIB, has been found in experimental as well as nonexperimental studies, in a broad range of different intergroup contexts (e.g., gender, nations, political parties, and sports teams), and in different languages (e.g., English, German, and Italian) by use of closed-ended (multiple-choice) as well as open-ended (free-response) measures of linguistic abstraction (e.g., Arcuri, Maass, & Portelli, 1993; Fiedler, Semin, & Finkenauer, 1993; Guerin, 1994; Karpinski & von Hippel, 1996; Maass et al., 1996; Maass, Corvino, & Arcuri, 1994; Maass et al., 1995; Maass, Montalcini, & Biciotti, 1998; Maass et al., 1989; Rubini & Semin, 1994; Webster, Kruglanski, & Pattison, 1997; for overviews, see Maass & Arcuri, 1992, 1996). More recently, the LIB phenomenon has even been shown to hold for 8-year-olds (Werkman, Wigboldus, & Semin, 1999). Interestingly, both the LEB and the LIB have been shown to be highly related to other implicit, unobtrusive measures of intergroup discrimination and stereotyping but not to explicit measures (Franco & Maass, 1996; von Hippel, Sekaquaptewa, & Vargas, 1997). Findings such as these not only demonstrate the validity of these biases but also support the notion that linguistic processes such as these operate in an implicit fashion (Semin & de Poot, 1997).

Throughout this research, differences in abstraction level are quantified by the use of the *linguistic category model* (Semin & Fiedler, 1988, 1991, 1992). The linguistic category model provides an interface between language and social cognition by establishing the general cognitive functions of various linguistic devices, namely, interpersonal verbs and adjectives. Consequently, it has served as a useful model in the investigation of the interindividual aspects of stereotyping (Maass et al., 1989). The linguistic category model distinguishes between four different levels of abstraction that correspond to four distinct word categories. *Descriptive-action verbs* are the most concrete and are used to convey a noninterpretive description of a single, observable event (e.g., "A shakes B's hand"). *Interpretive-action verbs* also describe a specific event but are more abstract in that they refer to a general class of behaviors instead of a specific concrete behavior (e.g., "A helps B"). *State verbs* constitute the next category in degree of abstraction and describe an emotional state and not a specific event (e.g., "A likes B"). The most abstract devices are *adjectives* (e.g., "A is helpful"). These generalize across specific events and objects and describe only the subject (for details, see Semin & Fiedler, 1988).

The Communicative Consequences of Biased Language Use

Besides the research on the content and validity of both the LIB and the LEB, more recent studies have started to examine the consequences of these linguistic biases. Results suggest that the LIB may be functional to self-esteem maintenance (Maass et al., 1996, Experiment 1), whereas the LEB may be functional to expectancy maintenance (Karpinski & von Hippel, 1996).[1] However, as yet, the consequences of these linguistic biases have been studied predominantly at an intraindividual level. Surprisingly little attention has been paid to the interindividual consequences of these linguistic biases. Although linguistic bias always has been assumed to have important interpersonal consequences (see Maass et al., 1989), the actual interindividual assumption has received no attention.

The question that requires investigation is as follows: What are the communicative consequences of linguistically biased messages? There is strong evidence from another research domain, the so-called question–answer paradigm (Semin, Rubini, & Fiedler, 1995), that subtle and relatively small differences in the level of abstraction of a message convey different inferences to recipients. What Semin and de Poot (1997) have shown is that systematic variations in the level of abstraction of a message lead recipients to draw different inferences with regard to a number of attributional dimensions, such as situational versus dispositional explanations. The important question with respect to the interpersonal aspects of stereotyping is whether variations in linguistic abstraction convey comparable inferences to recipients in the context of the LEB effect. That is, does abstractly worded information attributable to the LEB effect lead to stronger *dispositional inferences* and weaker situational inferences than information that is concretely worded? If not, then the assumption that stereotypes may be transmitted from one person to another by means of a linguistic bias would have to be reconsidered. Moreover, it must be shown that variations in the linguistic abstraction of messages actually mediate recipients' inferences in order to conclude unambiguously that such variations influence recipients' inferences in a systematic manner.

Preliminary evidence for the mediating role of linguistic abstraction in the interpersonal transmission of stereotypes recently was obtained by Ruscher and Duval (1998). They demonstrated that descriptions of incongruent attributes of out-group members influenced recipients' impressions as a function of whether the communicator had unique or shared information about a target. Importantly, this effect was mediated by linguistic abstraction. However, it should be noted that this mediating effect was obtained only for one of the two different out-group stereotypes that they used. Although these findings provide limited evidence because of the use of stereotype-incongruent information about out-group members only, they are in line with the assumption that, in general, differences in linguistic abstraction attributable to the LEB effect mediate recipients' inferences. It is this more general assumption that is put to test more directly in this research.

In three studies, we tested the LEB effect and its impact on recipients. In the first two studies, participants were asked to communicate stereotype-relevant messages using their own words. Subsequently, the impact of these messages on recipients was measured. In Study 1, participants functioned as communicators as well as recipients. In Study 2, participants functioned either as communicators or as recipients. In Study 3, all participants functioned as recipients of experimentally controlled messages.

Study 1

In Study 1, we investigated whether the inferences that recipients draw on the basis of linguistically biased information produced by the LEB effect are mediated by the abstraction level of a message. The experiment consisted of two parts. In Part 1 of the experiment, participants were asked to communicate self-generated behavioral examples that were stereotype relevant. We asked them to describe events in which either a male or a female friend behaved in either a stereotypically male or a stereotypically female way. Gender is a very salient in-group–out-group variable by which people categorize themselves and other people (Ashmore, 1981; Taylor, 1981). The advantages of the use of gender stereotypes in the current experimental context are that most of them are shared by both men and women (Basow, 1992) and that both male and female stereotypes have desirable as well as undesirable components. In line with the LEB phenomenon, we expected participants to communicate expectancy-consistent behaviors at a higher level of abstraction than expectancy-inconsistent behaviors (Hypothesis 1). That is, we expected information about a male target behaving in a stereotypically male way or a female target behaving in a stereotypically female way to be passed on more abstractly than information about a male target behaving in a stereotypically female way or a female target behaving in a stereotypically male way.

On the basis of the original LIB phenomenon, one may also expect desirable behaviors performed by an in-group member and undesirable behaviors performed by an out-group member to be passed on at a higher level of abstraction than the converse. Therefore, we systematically manipulated the desirability of the behavior in the stories as well. However, although gender is a very salient in-group–out-group variable, the intergroup context that gender evokes by itself is not especially in-group threatening (e.g., Basow, 1992). Because some form of in-group threat seems to be a prerequisite for the LIB to operate (e.g., Maass et al., 1996), it is unlikely that participants will show the LIB effect (see Maass et al., 1996).

In Part 2 of the experiment, participants functioned as recipients of the messages generated in Part 1. Each participant received and judged the stories generated by a randomly selected "other participant." We expected that the differences in linguistic abstraction attributable to a possible LEB effect in the messages generated in Part 1 of the experiment would influence the dispositional inferences made by recipients of these messages in Part 2. Therefore, we expected recipients' dispositional inferences to reflect the message abstraction pattern obtained in Part 1. We expected expectancy-consistent messages to lead to stronger dispositional inferences than expectancy-inconsistent messages (Hypothesis 2). Moreover, because we expected these differences in dispositional inferences to be attributable to differences in the level of abstraction of the messages, we expected the effect described in Hypoth-

[1] Karpinski and von Hippel (1996) describe the LIB as the tendency to describe expectancy-congruent behaviors at a higher level of abstraction than expectancy-incongruent behaviors. In the terminology that we propose, this means that they manipulated the more general LEB.

esis 2 to be mediated by the level of abstraction of the messages obtained in Part 1 of the experiment (Hypothesis 3).

Method

Participants. A total of 33 Dutch undergraduate students (15 men and 18 women) from the Free University Amsterdam participated in this study (M = 21.33 years old). Participants were recruited on campus and received 10Fl (approximately $5) for their participation. All participants were native Dutch speakers.

Design. The study consisted of a 2 (participant gender: male vs. female) × 2 (target gender: male vs. female) × 2 (behavior desirability: desirable vs. undesirable) × 2 (behavior stereotypicality: male vs. female) mixed-model design; the last two variables were varied within participants.

Procedure. The experiment was presented as a study on communication. First, participants were asked to think of either a good male or a good female friend whom they knew well (target manipulation). Then they were asked to give some background information about this friend. After this step, the actual experiment began. The experiment consisted of two parts. In Part 1, we asked participants to communicate four true stories about their friend. For each story, participants described one specific behavioral event in which they had witnessed their friend engage. We asked participants to communicate one story in which their friend demonstrated desirable, stereotypically male behavior; one story in which their friend engaged in desirable, stereotypically female behavior; one in which the target showed undesirable, stereotypically male behavior; and one in which the target showed undesirable, stereotypically female behavior (desirability and stereotypicality manipulations). The order of the stories was randomized. Participants could communicate their stories by typing them into a Macintosh computer. Before writing the stories, they were told that later on in the experiment, they would have to read their messages aloud to another, unknown participant. When participants had finished writing the four stories, they were told that it was not necessary to read the stories aloud to another participant. Instead, they proceeded with Part 2 of the experiment.

In Part 2 of the experiment, we asked participants to change computers with another participant (whom they did not see) and read the four stories that this other participant had written during Part 1. In this way, each participant read the stories of an unknown other participant. The four stories were presented in a random order, and each story was followed by two sets of questions. The first set consisted of four items that were developed in order to assess participants' dispositional inferences on the basis of information differing in linguistic abstraction (Wigboldus, 1998). One item was adapted from Maass et al. (1989, Experiment 3); they had used this item to measure the implications of differences in linguistic abstraction. Participants were asked to estimate the percentage of future situations in which the target would repeat the behavior described in the story by indicating a percentage (repetition likelihood).[2] The other three items were designed to measure more directly dispositional versus situational attributions about the target on the basis of the information in the story. Participants were asked the following questions: "To what extent is the behavior of the target due to the situation in which he or she finds him- or herself?" (situation attribution); "To what extent is the behavior of the target due to the personality of the target?" (person attribution); and "To what extent is the behavior of the target due to the situation or the person?" (situation–person attribution). This last item was measured on a bipolar scale ranging from *situation* (1) to *personality* (100). Except for this last item and the repetition likelihood item, participants could indicate their answers on 7-point scales ranging from *not at all* (1) to *very much* (7). Ratings were completed in a randomized order.

The second set of items consisted of four questions that served as manipulation checks for the desirability and stereotypicality manipulations. For each story separately, participants were asked to indicate on a 7-point scale, ranging from *not at all* (1) to *very much* (7), to what extent they considered the behavior displayed in the story to be stereotypically male, stereotypically female, desirable, and undesirable.

Finally, participants indicated their age, were informed about the purpose of the study, and were thanked for their participation in the experiment.

Dependent variables. The first dependent variable consisted of the abstraction level of the stories that participants wrote in Part 1 of the experiment. The information that each participant transmitted was coded by an independent rater familiar with Semin and Fiedler's (1988, 1991) linguistic category model and its scoring criteria. First, every verb (interpersonal as well as noninterpersonal) and every adjective referring to the target of the story was coded on the basis of the linguistic category model. These items were then scored in the following way: descriptive-action verbs = 1, interpretive-action verbs = 2, state verbs = 3, and adjectives = 4 (Semin & Fiedler, 1989). On the basis of these scores, the *mean level of abstraction* was computed for each story separately by adding the different scores and dividing them by their number. The mean level of abstraction for each story could thus vary between 1 (only descriptive-action verbs, very concrete) and 4 (only adjectives, very abstract). One third of the 132 stories were also coded by a second rater to test the consistency of the coding, which was satisfactory (intercoder reliability, r = .88).

On the basis of the dispositional inference items obtained in Part 2 of the experiment, we constructed a scale consisting of the unweighted mean of the standardized means of the four dispositional inference judgments made for each story. For this purpose, the "situation question" was recoded in the direction of the scale. Higher values on this scale indicated stronger personality attributions and weaker situational attributions (Cronbach's alpha = .78).[3]

Results

The analyses were conducted with a 2 (participant gender: male vs. female) × 2 (target gender: male vs. female) × 2 (behavior desirability: desirable vs. undesirable) × 2 (behavior stereotypicality: male vs. female) analysis of variance (ANOVA) in which the last two variables were varied within participants.

Manipulation checks. Before analyzing the differences in the mean level of abstraction of the stories, we first checked our manipulations. Each of the four manipulation checks was subjected to the above 2 × 2 × 2 × 2 ANOVA. All four analyses revealed the expected effects. First, the stereotypically male stories were judged significantly more stereotypically male (M = 4.68, SD = 1.02) than the stereotypically female stories (M = 3.20, SD = 1.03), $F(1, 29) = 43.44$, $p < .001$. Second, the stereotypically female stories were judged significantly more stereotypically female (M = 4.91, SD = 1.03) than the stereotypically male stories (M = 3.41, SD = 1.16), $F(1, 29) = 44.63$, $p < .001$. Third, the desirable stories were judged significantly more desirable (M = 5.32, SD = 1.00) than the undesirable ones (M = 2.55, SD = 1.03), $F(1, 29) = 111.90$, $p < .001$. Finally, the undesirable stories were judged significantly more undesirable (M = 5.14,

[2] Maass and colleagues (Maass et al., 1989; Experiment 3) asked participants to indicate on a 5-point scale how likely it is that the same behavior will be repeated in the future. However, to obtain a more precise measurement, we asked participants to make an actual chance estimation in percentages.

[3] Even though Miller, Smith, and Uleman (1981) demonstrated that dispositional versus situational is not a single continuum, the present scale served our purpose here, which was to measure variations in recipients' dispositional inferences attributable to differences in linguistic abstraction (for a comparable use of a situation–disposition scale, see Winter & Uleman, 1984, and Winter, Uleman, & Cunniff, 1985).

$SD = 1.18$) than the desirable ones ($M = 2.42$, $SD = 1.02$), $F(1, 29) = 120.86$, $p < .001$.

Mean level of abstraction. Abstraction level was also subjected to the above 2 × 2 × 2 × 2 ANOVA. On the basis of Hypothesis 1, an interaction was expected between target gender and behavior stereotypicality; this interaction was significant, $F(1, 29) = 19.81$, $p < .001$ (see Table 1). Simple main effects revealed that in line with the LEB, the behavior of the male target was communicated more abstractly when this behavior was stereotypically male than when it was stereotypically female, $F(1, 29) = 15.04$, $p < .001$. Moreover, the behavior of the female target was communicated more abstractly when this behavior was stereotypically female than when it was stereotypically male, $F(1, 29) = 5.92$, $p < .05$. Thus, support for the LEB described in Hypothesis 1 was found. Stereotype-consistent information ($M = 2.45$, $SD = 0.42$) was communicated more abstractly than stereotype-inconsistent information ($M = 2.14$, $SD = 0.32$).

As expected, no support was found for a linguistic bias based on in-group protective motives. The three-way interaction among participant gender, target gender, and behavior desirability that could be expected on the basis of the LIB was not significant, $F(1, 29) = 0.86$.

Dispositional inferences. The ratings on the dispositional inferences scale made by the recipients were also subjected to the above 2 × 2 × 2 × 2 ANOVA. The analysis revealed the predicted interaction effect between target gender and behavior stereotypicality, $F(1, 29) = 15.72$, $p < .001$ (see Table 2). Simple main effects revealed that the behavior of the male target led to more dispositional inferences by recipients when the behavior was stereotypically male than when it was stereotypically female, $F(1, 29) = 8.17$, $p < .01$. Moreover, the behavior of the female target led to more dispositional inferences when the behavior was stereotypically female than when it was stereotypically male, $F(1, 29) = 6.81$, $p < .05$. Overall, in line with Hypothesis 2, the behavior demonstrated in the stereotype-consistent stories ($M = 0.21$, $SD = 0.51$) was attributed more to the personality of the target than the behavior demonstrated in the stereotype-inconsistent stories ($M = -0.21$, $SD = 0.46$).

Mediational analyses. For mediation to occur, three conditions should be met (Baron & Kenny, 1986). First, the type of story should affect the mean level of abstraction. Second, the type of story should affect recipients' dispositional inferences. Third, the mean level of abstraction should affect recipients' dispositional inferences. If these three conditions hold in the predicted direction, then the effect of the type of story on recipients' dispositional inferences must be decreased when the mediating effect of linguistic abstraction is controlled for (Baron & Kenny, 1986).

Table 1
Mean Level of Abstraction as a Function of Target Gender and Behavior Stereotypicality

	Behavior stereotypicality	
Target gender	Stereotypically male	Stereotypically female
Male		
M	2.48_a	2.07_b
SD	0.39	0.30
Female		
M	2.19_b	2.43_a
SD	0.32	0.46

Note. $N = 33$. Values can vary between 1 and 4, with higher values indicating higher levels of abstraction. Cell means in rows and columns not sharing the same subscripts differ significantly from each other at $p < .05$.

Table 2
Recipients' Dispositional Inferences as a Function of Target Gender and Behavior Stereotypicality

	Behavior stereotypicality	
Target gender	Stereotypically male	Stereotypically female
Male		
M	0.27_a	-0.19_b
SD	0.52	0.46
Female		
M	-0.22_b	0.16_a
SD	0.47	0.51

Note. $N = 33$. Values are based on a standardized scale (z values), with higher values indicating stronger dispositional inferences. Cell means in rows and columns not sharing the same subscripts differ significantly from each other at $p < .05$.

To test whether the differences in recipients' dispositional inferences attributable to the LEB were mediated by the mean level of abstraction of the stories, we conducted separate path analyses (see Figure 1). In these analyses, the expectancy consistency of the stories was contrast coded as 1 when a male target behaved in a stereotypically male way or a female target behaved in a stereotypically female way and −1 when a male target behaved in a stereotypically female way or a female target behaved in a stereotypically male way. First, a direct relationship between the expectancy consistency of the stories and recipients' dispositional inferences was found, $\beta = .57$, $t(32) = 3.83$, $p < .001$. Second, the expectancy of the stories was predictive of the tendency to communicate expected stories at a higher level of abstraction than unexpected stories, $\beta = .63$, $t(32) = 4.57$, $p < .001$. Third, when both expectancy consistency and linguistic abstraction were entered into the equation simultaneously, differences in the level of abstraction were predictive of recipients' dispositional inferences, $\beta = .66$, $t(32) = 4.27$, $p < .001$. Moreover, the relationship between the expectancy of the stories and recipients' dispositional inferences became nonsignificant, $\beta = .15$, $t(32) = 0.98$. Using Baron and Kenny's (1986) modification of the Sobel test (see Kenny, Kashy, & Bolger, 1998), we found that the reduction in effect size attributable to linguistic abstraction was statistically significant, $Z = 3.08$, $p < .05$. Thus, we obtained evidence that the mean level of abstraction of the stories mediated recipients' dispositional inferences (Hypothesis 3).

Discussion

This experiment provides support for the assumption that the subtle variations in linguistic abstraction attributable to transmitters' stereotypical views actually mediate recipients' cognitive inferences. Participants generated 132 different messages, none of which were the same. Despite the huge differences in content between the messages, strong systematic similarities in the level of abstraction of the different messages were found. That is, in line with the LEB hypothesis, expectancy-consistent messages were communicated at a higher level of abstraction than expectancy-

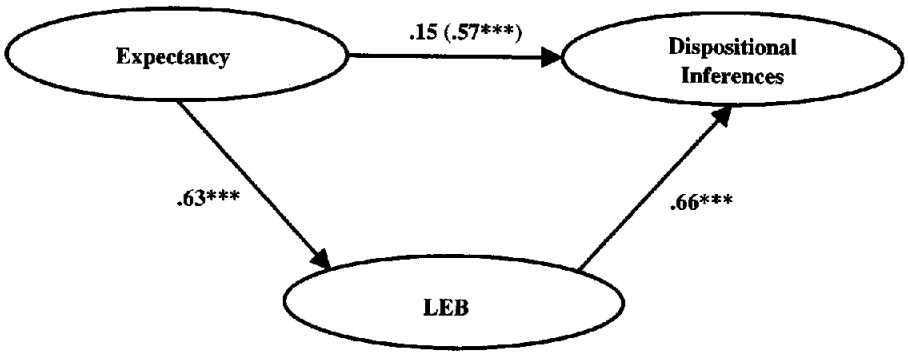

Figure 1. Path analyses depicting the mediating role of the linguistic expectancy bias (LEB) on recipients' dispositional inferences. The standardized beta value for the direct effect is given in parentheses. The expectancy consistency of the stories was contrast coded as 1 when a male target behaved in a stereotypically male way or a female target behaved in a stereotypically female way and −1 when a male target behaved in a stereotypically female way or a female target behaved in a stereotypically male way. *** $p < .001$.

inconsistent messages. Subsequently, the expectancy-consistent messages led to stronger dispositional inferences by recipients than the expectancy-inconsistent messages. Moreover, this effect was mediated by the mean level of abstraction of the messages. Thus, despite major differences in content between the messages, the level of linguistic abstraction could be shown to have significantly mediated the impact of these messages on a recipient. These results support the assumption that linguistic abstraction plays an important role in the interindividual transmission and maintenance of stereotypes.

One of the strong points of this experiment is that communicators generated their own behavioral examples and communicated them in their own words. In most research performed on the LEB so far, participants were asked to choose between fixed descriptions of behavioral episodes that were carefully chosen on the basis of extensive pretesting (e.g., Maass et al., 1995). The finding that a clear LEB pattern is also obtained when communicators use their own words to describe events based on their own personal experiences strongly adds to the validity of this bias. Moreover, the finding that differences in linguistic abstraction mediated the inferences made by recipients, despite the innumerable differences in content between the messages, also seems strong evidence with respect to the validity of this mediational effect.

However, it should be noted that, as always, there are two sides to the same coin. The free format of this experiment constitutes not only its main strength but also its main weakness. Because of the differences in content between the messages, recipients may have based their dispositional inferences to a large extent on the stereotypical content of the messages only, instead of basing them to a significant extent on the level of abstraction of the messages. In line with earlier findings (e.g., Bell, Wicklund, Manko, & Larkin, 1976; Jackson, Sullivan, & Hodge, 1993; Macrae & Shepherd, 1989) and theorizing (e.g., Trope, 1986) on the attribution of expected and unexpected behaviors of targets about which a person has prior knowledge (e.g., a stereotype), one may argue that the content of the expected stereotype-consistent messages alone may have led to stronger dispositional inferences, whereas the content of the unexpected stereotype-inconsistent messages may have been responsible for stronger situational inferences. After all, when someone that a person thinks he or she knows engages in unexpected behavior, a situational attribution seems the most efficient way to explain the behavior in order to keep expectancies about this person intact. Variations in the level of abstraction of the messages may have been accompanied by comparable variations in the expectancy consistency of the messages. If so, the content of the messages, instead of linguistic abstraction per se, also may have mediated the effect on recipients' dispositional inferences.

Post hoc mediational analyses that were performed with the stereotypicality judgments that recipients made of each story (see *Manipulation checks* subsection) as a measure of each story's stereotype consistency did not support this alternative explanation. The stereotypicality judgments did not mediate recipients' dispositional inferences [effect covariate, $F(1, 28) = 0.02$]. Therefore, it seems unlikely that recipients based their judgments on the content of the stories only. However, in order to eliminate the possible effects of differences in content on recipients' judgments, we conducted a second study in which we aimed to keep the content of the messages constant by asking communicators to pass on existing (and thus controlled) stereotype-relevant stories instead of having them generate their own stories.

Also, in Study 1, all participants functioned as communicators as well as recipients. In everyday communication, people continually switch roles between being a communicator and being a recipient. Our procedure thus may not be that far removed from everyday life communicative behavior. However, in the context of a controlled experiment, this method seems less desirable. After all, it is possible that being a communicator in Part 1 of the experiment affected how participants responded to communications that they received from others during Part 2. To address this potential limitation, participants served as either communicators or recipients in the second study.

Finally, in Study 1, participants were asked to describe the behavior of a good friend. Using targets for whom people have a great deal of familiarity creates ambiguities concerning whether their descriptions actually reflect a bias. If their best friends happen to be stereotypical people, then it is not really a bias if they describe their stereotype-consistent behavior at a higher level of abstraction than their stereotype-inconsistent behavior. Therefore, in Study 2, participants were presented with unfamiliar targets.

Study 2

Again, the experiment consisted of two parts. In Part 1, half of the participants were asked to pass on in their own words a stereotype-relevant story that they received from an unknown source. The information in this story described either a Dutch or a Flemish target who behaved in either a stereotypically Dutch or a stereotypically Flemish way. The Dutch and Flemish speak the same language and have clear stereotypical views of each other that are shared by both groups (e.g., Jansen & Verzijl, 1991). In line with the LEB hypothesis, we expected participants to pass on expectancy-consistent behaviors at a higher level of abstraction than expectancy-inconsistent behaviors (Hypothesis 1). That is, we expected information about a Flemish target behaving in a stereotypically Flemish way or a Dutch target behaving in a stereotypically Dutch way to be passed on more abstractly than stereotype-inconsistent information.

Although nationality is a very distinctive in-group versus out-group variable, the intergroup context that is evoked by the Dutch–Flemish distinction is not especially in-group threatening (Jansen & Verzijl, 1991). Because of this lack of in-group threat, it is unlikely that participants will show the LIB effect (e.g., Maass et al., 1996).

In Part 2, the remaining half of the participants functioned as the recipients of the messages passed on by the first group of recipients. In line with the results of Study 1, we expected that the linguistic bias described in Hypothesis 1 would influence recipients' dispositional inferences. Therefore, we expected recipients' dispositional inferences to reflect the message abstraction pattern obtained in Part 1 (Hypothesis 2). Moreover, this difference should be attributable to a significant extent to differences in the level of abstraction of the messages. Thus, we expected the effect described in Hypothesis 2 to be mediated by the level of abstraction of the messages (Hypothesis 3).

Method

Participants. A total of 132 Dutch undergraduate students (58 men and 74 women) from the Free University Amsterdam participated in this study (M = 21.58 years old). Half of the participants took part in Part 1 of the experiment; the other half took part in Part 2. Participants were recruited on campus and received 10Fl (approximately $5) for their participation. All participants were native Dutch speakers.

Design. The stories that participants in Part 1 of the experiment were asked to pass on described either a Dutch or a Flemish target who engaged in either stereotypically Dutch or stereotypically Flemish behavior that was either desirable or undesirable. The experiment thus consisted of a 2 (target nationality: Flemish vs. Dutch) × 2 (behavior stereotypicality: Flemish vs. Dutch) × 2 (behavior desirability: desirable vs. undesirable) between-participants design.

Development of stimulus materials. The stories used as stimulus materials in this experiment were developed on the basis of three pilot studies. In the first pilot study, Dutch undergraduate students (N = 21) and Flemish undergraduate students (N = 17) generated as many desirable and undesirable characteristics as possible that they considered to be either stereotypically Dutch or stereotypically Flemish. In the second pilot study, the 23 most cited characteristics shared by both groups were rated by Dutch (N = 75) and Flemish (N = 67) undergraduate students for their social desirability and for their Dutch or Flemish stereotypicality by use of a perceived distribution approach to stereotyping (Linville, Fischer, & Salovey, 1989). On the basis of the selection criteria described by Maass et al. (1995, Experiment 1), the four most stereotypical characteristics were selected: modest (desirable, stereotypically Flemish), conservative (undesirable, stereotypically Flemish), economical (desirable, stereotypically Dutch), and noisy (undesirable, stereotypically Dutch). On the basis of these four characteristics, four stories of approximately 300 words each were created. Each story was indicative of only one characteristic, and this characteristic was conveyed through three concrete actions by the target relative to the single characteristic and three adjectives that described the target and that were synonyms for that characteristic. In the third and final pilot study, Dutch undergraduate students (N = 18) judged the stereotypicality and social desirability of each story. They were asked to indicate on a 7-point scale ranging from *not at all* (1) to *very much* (7) the extent to which they thought that the target of each story was stereotypically Dutch or stereotypically Flemish. In addition, participants were asked to rate the social desirability of each story on a 7-point scale ranging from *very undesirable* (1) to *very desirable* (7). The results indicated that the stories, like the characteristics on which they were based, differed significantly from each other with regard to the stereotypicality and desirability dimensions (see Wigboldus, 1998).

Procedure. Part 1 of the experiment was carried out on Macintosh computers and was described to participants as a study on communication. Participants in Part 1 of the experiment were asked to put on a headphone set and listen to the information on a tape recorder. They could play the tape only once. The tape contained one of the four stories described above with either a Flemish or a Dutch target. The nationality of the target was stated explicitly in the beginning of the story, and nationality markers throughout the story (names, places, and so on) kept referring to the national origin of the target. After having listened to the stimulus story, participants listened to a second story that was used as a filler to prevent literal recall of the first story.[4] This second story was the same for every participant. It was about another target (different name) who always had the same nationality as the target in the first story. In this way, participants could not confuse the nationality of the targets from the first and second stories. A pretest indicated that the behavior displayed in the second story (honesty) was neutral with regard to the Flemish or Dutch distinction.

The only instruction that participants received was to listen carefully as to whether the target in each of the two stories was Dutch or Flemish. After listening to the stories, participants were asked to indicate the nationality of the target for each story separately. Subsequently, participants went on with another (unrelated) task that took them about 1 hr to complete. This task also served as a filler to prevent literal recall of the stimulus story and to enhance the participants' use of their own words when communicating the information in the stimulus story. After completing the filler task, participants were asked to communicate the first story that they had heard on the tape recorder to another, unknown participant. They could do so by typing their messages into the computer. To make sure they knew what information had to be passed on, participants were reminded of the name and nationality of the target of the stimulus story. Finally, the manipulations were checked by asking participants to indicate the stereotypicality and the desirability of the stimulus story on two bipolar 7-point scales ranging from *stereotypically Flemish* (1) to *stereotypically Dutch* (7) and from *very undesirable* (1) to *very desirable* (7). Upon completion of this task, participants indicated their age, gender, and native language. After this, the participants of Part 1 of the experiment were informed about the purpose of the study and thanked for their participation.

Part 2 of the experiment also was described to participants as a study on communication. Participants in Part 2 of the experiment were asked to read and judge one of the stories that were communicated by the participants in Part 1. The stories were randomly assigned to participants so that each participant read a printed version of one of the stories and each story was

[4] Earlier research indicated that participants, when asked to communicate only one story, did not use their own words to communicate the information in the story but instead tried to recall the story as literally as possible. In order to ensure that they communicated a story using their own words, a second story was presented as a filler.

read only once. Then, participants rated the stories on the same four dispositional inference items as those used in Study 1. Upon completion of these ratings, participants indicated their age, gender, and native language. Finally, they were informed about the purpose of the study and thanked for their participation in the experiment.

Dependent variables. Each of the 66 different stories passed on by the participants in Part 1 of the experiment was coded by two independent raters familiar with both Semin and Fiedler's (1988, 1991) linguistic category model and its scoring criteria (intercoder reliability, $r = .88$). Coding, scoring, and calculation of the mean level of abstraction of the stories were done by the same method as that used in Study 1.

The second dependent variable was based on the dispositional inferences that participants made for each story in Part 2 of the experiment. As in Study 1, we constructed a scale consisting of the unweighted mean of the standardized means of the four dispositional inference judgments made for each story (Cronbach's alpha = .73).

Results

Manipulation checks. Before analyzing the mean level of abstraction of the stories passed on by the participants in Part 1 of the experiment, we checked whether participants were able to indicate correctly the nationality of the target after listening to the stories. This check revealed that each of the 66 participants included in the study was able to indicate the correct nationality of the target. Moreover, we checked the manipulations embedded in the different stories that were used. Both the stereotypicality and the desirability manipulation checks were subjected to a 2 (target nationality: Flemish vs. Dutch) × 2 (behavior stereotypicality: Flemish vs. Dutch) × 2 (behavior desirability: desirable vs. undesirable) between-participants ANOVA. Both analyses revealed the expected effects. First, the behavior in the stereotypically Dutch stories ($M = 5.10$, $SD = 1.47$) was considered more stereotypically Dutch and hence less stereotypically Flemish than the behavior in the stereotypically Flemish stories ($M = 3.83$, $SD = 1.69$), $F(1, 58) = 8.69$, $p < .005$. Second, the behavior in the desirable stories ($M = 5.22$, $SD = 1.47$) was considered more desirable and hence less undesirable than the behavior in the undesirable stories ($M = 1.53$, $SD = 0.71$), $F(1, 58) = 172.55$, $p < .001$.

Mean level of abstraction. The mean level of abstraction of the stories passed on by participants in Part 1 of the experiment was also subjected to a 2 (target nationality: Flemish vs. Dutch) × 2 (behavior stereotypicality: Flemish vs. Dutch) × 2 (behavior desirability: desirable vs. undesirable) between-participants ANOVA. On the basis of our first hypothesis, we expected an interaction between target nationality and behavior stereotypicality. This interaction was significant, $F(1, 58) = 5.00$, $p < .05$ (see Table 3). Simple main effects revealed that, as expected, the behavior of the Flemish targets was communicated less abstractly when this behavior was stereotypically Dutch than when this behavior was stereotypically Flemish, $F(1, 58) = 9.94$, $p < .005$. For the Dutch targets, however, the expected difference in behavior stereotypicality was not obtained, $F(1, 58) = 0.00$.

The analysis also revealed a significant main effect for behavior stereotypicality, $F(1, 58) = 4.93$, $p < .05$. Stereotypically Flemish behavior ($M = 2.92$, $SD = 0.45$) was communicated more abstractly than stereotypically Dutch behavior ($M = 2.60$, $SD = 0.72$).

On the basis of in-group protective motives, an interaction between target nationality and behavior desirability could be expected. The analyses revealed no support for this interaction, $F(1, 58) = 0.21$. Also, specific comparisons between relevant pairs of means revealed no significant effects, in line with the in-group protection hypothesis.

Table 3
Mean Level of Abstraction as a Function of the Nationality of the Target and the Stereotypicality of the Behavior

	Behavior stereotypicality	
Target nationality	Stereotypically Flemish	Stereotypically Dutch
Flemish		
M	3.02_a	2.36_b
SD	0.41	0.79
Dutch		
M	2.80_a	2.80_a
SD	0.49	0.60

Note. $N = 66$. Values can vary between 1 and 4, with higher values indicating higher levels of abstraction. Cell means in rows and columns not sharing the same subscripts differ significantly from each other at $p < .05$.

Dispositional inferences. The dispositional inferences made by participants in Part 2 of the experiment were subjected to the same 2 × 2 × 2 between-participants ANOVA as that described above. The expected interaction between target nationality and behavior stereotypicality failed to reach conventional levels of significance, $F(1, 58) = 2.49$, $p = .12$. However, as Rosenthal and Rosnow (1985) and Rosnow and Rosenthal (1995) have shown, because of the generality of interaction components that test all possible interaction patterns, a priori contrast analyses that test the predicted pattern of means may be more informative than omnibus F tests (see also Gilbert & Silvera, 1996). In particular, in the context of this experiment, the use of a priori contrasts seems to be warranted because of the specific pattern of means that was obtained in Part 1 of the experiment. After all, recipients' dispositional inferences are expected to depend to a large extent on the mean level of abstraction of the stories. Therefore, recipients' dispositional inferences should reflect the same specific pattern of results as was found for linguistic abstraction.

In line with the pattern of means found for the mean level of abstraction of the stories on which the current dispositional inferences were based, we performed the following a priori contrast analysis. A weight of 1 was given to cells of the design in which a Flemish target behaved in a stereotypically Flemish way, a Dutch target behaved in a stereotypically Dutch way, or a Dutch target behaved in a stereotypically Flemish way. Subsequently, a weight of −3 was given to the cell in which a Flemish target behaved in a stereotypically Dutch way. In line with Hypothesis 2, this a priori contrast analysis revealed a significant effect, $F(1, 58) = 4.75$, $p < .05$ (see Table 4). Analyses of the simple main effects showed that the pattern of means almost exactly mirrored the pattern of means obtained for the mean level of abstraction of the stories (compare Table 3). Stories of Flemish targets engaging in stereotypically Flemish behavior led to more dispositional inferences than stories of Flemish targets engaging in stereotypically Dutch behavior, $F(1, 58) = 6.57$, $p < .05$. Moreover, just as with the mean level of abstraction of the stories, this difference was not significant for the Dutch targets, $F(1, 58) = 0.31$.

Mediational analyses. To test for possible mediation, we conducted separate path analyses (see Figure 2). In line with the contrast analysis outlined above, the type of message was contrast

Table 4
Dispositional Inferences as a Function of the Nationality of the Target and the Stereotypicality of the Behavior

	Behavior stereotypicality	
Target nationality	Stereotypically Flemish	Stereotypically Dutch
Flemish		
M	0.28_a	-0.37_b
SD	0.56	0.68
Dutch		
M	0.07_a	$-0.07_{a,b}$
SD	0.88	0.75

Note. $N = 66$. Values are based on a standardized scale (z values), with higher values indicating stronger dispositional inferences. Cell means in rows and columns not sharing the same subscripts differ significantly from each other at $p < .05$.

coded as 1 when a Flemish target behaved in a stereotypically Flemish way, a Dutch target behaved in a stereotypically Dutch way, or a Dutch target behaved in a stereotypically Flemish way and −1 when a Flemish target behaved in a stereotypically Dutch way. First, a direct relationship between the type of message and recipients' dispositional inferences was found, $\beta = .26$, $t(65) = 2.16$, $p < .05$. Second, the type of message was predictive of the tendency to communicate messages at a relatively high or low level of abstraction, $\beta = .35$, $t(65) = 2.99$, $p < .005$. Third, when the type of message and linguistic abstraction were entered into the equation simultaneously, differences in level of abstraction were predictive of recipients' dispositional inferences, $\beta = .29$, $t(65) = 2.30$, $p < .05$. Moreover, the direct relationship between the type of message and recipients' dispositional inferences became nonsignificant, $\beta = .16$, $t(65) = 1.28$. Using Baron and Kenny's (1986) modification of the Sobel test (see Kenny et al., 1998), we found that the reduction in effect size attributable to linguistic abstraction was statistically significant, $Z = 1.76$, $p < .05$ (one-tailed).

In summary, in line with Hypothesis 3, differences in recipients' dispositional inferences as a function of the type of message in Part 1 were mediated by differences in linguistic abstraction.

Discussion

Study 2 provides further support for the assumption that subtle variations in linguistic abstraction attributable to an expectation bias actually mediate recipients' cognitive inferences. Participants in Part 2 of the experiment functioned as recipients of the messages generated by participants in Part 1. The results indicated that the pattern of means obtained for recipients' dispositional inferences almost exactly mirrored the pattern of means obtained for the mean level of abstraction of the messages that were passed on by participants in Part 1. That is, messages about Flemish targets behaving in a stereotypically Dutch way led to fewer dispositional inferences than messages about Flemish targets behaving in a stereotypically Flemish way and messages about Dutch targets behaving in a stereotypically Dutch or Flemish way. Importantly, this effect of the type of message on recipients' dispositional inferences was found to be significantly mediated by the level of linguistic abstraction of a message. In other words, differences in recipients' dispositional inferences to a large and significant extent seem to have been attributable to differences in linguistic abstraction. Thus, the assumption that linguistic abstraction plays an important role in the interindividual transmission and maintenance of stereotypes is supported.

One may argue that the conclusions that can be drawn from this research are somewhat limited owing to the specific pattern of results obtained in Part 1 of the experiment. The linguistic expectancy bias occurred only when stories about Flemish targets were communicated. Messages about Dutch targets revealed no evidence of the LEB effect. However, a closer inspection of the research literature reveals that these results are in line with earlier LIB research (e.g., Maass et al., 1989, 1995, 1998). In this research, a more pronounced LIB effect was found in descriptions of behaviors of out-group targets than of in-group targets. One may argue that this pattern occurs because people tend to have a more heterogeneous view of their in-group (e.g., Park & Judd, 1990). Therefore, stereotype-inconsistent behavior may be perceived as less unexpected in the case of an in-group member than in that of an out-group member. Obviously, these conclusions remain somewhat speculative given the fact that this experiment involved only Dutch participants.

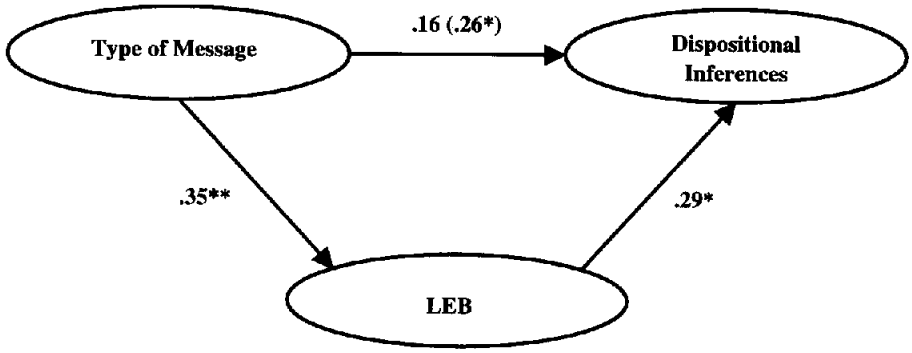

Figure 2. Path analyses depicting the mediating role of the linguistic expectancy bias (LEB) on recipients' dispositional inferences as a function of type of message. The standardized beta value for the direct effect is given in parentheses. The type of message was contrast coded as 1 when a Flemish target behaved in a stereotypically Flemish way, a Dutch target behaved in a stereotypically Dutch way, or a Dutch target behaved in a stereotypically Flemish way and −1 when a Flemish target behaved in a stereotypically Dutch way. * $p < .05$. ** $p < .01$.

What is more relevant to our study aims is the finding that recipients' dispositional inferences reflected almost perfectly the specific pattern of linguistic abstraction that was obtained. This finding strengthens our main argument concerning the influence of linguistic abstraction on recipients' inferences. Furthermore, in this experiment, story content was controlled for. Therefore, systematic variation in content between the stories offers no alternative explanation for the mediation of the dispositional inferences. Of course, one could argue that some other feature of the message may have been responsible for the observed systematic inferences made by recipients. We examined some obvious contenders, such as message length and the modifiers (e.g., always) that were used, and did not detect any systematic contributions of such variables to recipients' inferences.

Nevertheless, as Sigall and Mills (1998) noted, even the use of Baron and Kenny's (1986) recommended statistical procedures for testing mediational hypotheses cannot rule out the possibility that some other variable is responsible for the effect of the independent variable on the dependent variable; they conclude that, "When there is ambiguity in an experiment concerning a proposed mediating variable, the best way to show that the proposed mediator is responsible for the influence . . . is to conduct another experiment that manipulates the proposed mediator" (p. 225).

This goal was precisely the aim of our third study. In order to provide a more direct test of the effect of differences in linguistic abstraction on recipients' inferences, we performed an experiment in which linguistic abstraction was manipulated.

Study 3

In Study 3, all participants functioned as recipients of experimentally controlled messages. These messages described male or female targets engaging in stereotypically male or stereotypically female behavior. Thus, the messages contained either stereotype-consistent or stereotype-inconsistent information. More importantly, the level of abstraction of these messages was manipulated while the content was kept constant. In the previous studies, in line with the LEB phenomenon, the expected stories were, in general, the more abstract ones, and the unexpected stories were the more concrete ones. In these studies, stereotype consistency and level of abstraction therefore could be considered confounded. In order to disentangle the influences of stereotype content and linguistic abstraction, we manipulated both variables orthogonally in Study 3.

In line with our mediation hypothesis and earlier findings on the impact of linguistic abstraction (e.g., Maass et al., 1989, Experiment 3; Semin & Fiedler, 1988, 1992), we expected that linguistic abstraction would exert a significant influence on recipients' inferences, independently of the content of the messages. More specifically, we predicted that abstract messages would lead to stronger dispositional inferences than concrete messages (Hypothesis 1).

Our main interest in this study was the effect of linguistic abstraction on recipients' inferences. No specific predictions were made with regard to the influence of message content because the effect of content (expected vs. unexpected events) was not relevant for our central hypothesis. However, we should note the outcomes for content effects in the existing literature. Earlier research (e.g., Bell et al., 1976; Jackson et al., 1993; Macrae & Shepherd, 1989) suggested that if one has prior knowledge about the target, then the content of the message (i.e., the description of a consistent or inconsistent behavior) has an impact on dispositional inferences. Expected behaviors lead to stronger dispositional inferences than unexpected behaviors. However, other research suggested that if prior knowledge is not present, then expectancy-inconsistent behavior may be more salient, informative, and therefore diagnostic of the person than expectancy-consistent behavior (Fiske & Neuberg, 1990; Jones & Davis, 1965; Stangor & McMillan, 1992). Research in this attributional tradition shows that unexpected behaviors are more likely to lead to dispositional inferences than expected behaviors. In Study 3, we used stimulus material in which prior knowledge was not available.

Method

Participants. A total of 50 Dutch undergraduate students (16 men and 34 women) from the University of Nijmegen participated in this study (M = 22.48 years old). Participants were recruited on campus and received 5Fl (approximately $2.50) for their participation. All participants were native Dutch speakers.

Design. The stories that participants were asked to read and judge described male and female targets who engaged in stereotypically male or stereotypically female behavior. Each story was stated in either concrete terms or abstract terms. The experiment thus consisted of a 2 (participant gender: male vs. female) × 2 (target gender: male vs. female) × 2 (behavior stereotypicality: male vs. female) × 2 (linguistic abstraction: concrete vs. abstract) mixed-model design; the last three variables were varied within participants.

Development of stimulus materials. The stories used as stimulus materials in this experiment were developed on the basis of the traits and behaviors presented in the Dutch Gender Identification Questionnaire (Willemsen & Fischer, 1999). For the development of this questionnaire, Willemsen and Fischer pretested traits and behaviors and selected those that were strongly related to Dutch gender stereotypes. For our purposes, we selected from their list the trait domains and behaviors that differed significantly on gender identification and were relatively easy to use in our context. The stereotypically male traits that we selected were as follows: independent, handy, adventurous, and technical. The stereotypically female traits were as follows: careful, considerate, emotional, and spontaneous. Care was taken not to select socially undesirable trait domains in order to prevent valence effects. For each trait domain, a matching behavior was selected. On the basis of each trait–behavior combination, a concrete story and an abstract story were created. These two types of stories were exactly the same except for the last sentence. In the concrete stories, this sentence always described a specific behavior, whereas in the abstract stories, an adjective was presented in the final sentence. For example, the trait domain *emotional* resulted in the following two stories.

> Concrete version: Sandra is watching a dramatic movie on television. When the movie is at its lowest ebb, Sandra reaches for a tissue. She brushes away a tear from her eyes.
>
> Abstract version: Sandra is watching a dramatic movie on television. When the movie is at its lowest ebb, Sandra reaches for a tissue. She is emotional.

Procedure. The experiment was carried out on Macintosh computers and was described to participants as a study on reading. Participants were presented with eight stories. Each story described one of the eight content areas presented above. Thus, half of the stories described stereotypically male events and the other half described stereotypically female events. For half of these stories, male names were used to indicate the target, and for the other half, female names were used. Moreover, half of the stories represented concrete behaviors and the other half contained abstract adjectives. In other words, except for participant gender, each cell of the

experimental design was embedded within each of the eight stories that participants received. Importantly, however, in order to rule out effects attributable to idiosyncrasies of the specific stories, care was taken that, between participants, the same stories represented different cells of the experimental design. In order to accomplish this goal, four different between-participants story conditions were created; in each condition, each specific story represented a specific cell of the experimental design. For instance, the emotional story was presented concretely with a male target in Condition 1, concretely with a female target in Condition 2, abstractly with a male target in Condition 3, and abstractly with a female target in Condition 4. In this way, all eight stories also varied systematically between participants.

The eight stories appeared on the computer screen one at a time in a random order, and each story was followed by five questions. Participants were asked to rate each story on the same four dispositional inference items that were used in Study 1 and Study 2. Additionally, the target gender and behavior stereotypicality manipulations were checked by asking participants to indicate to what extent they considered the target to be a prototypical man (or woman, depending on the gender of the target). They could indicate their answer to this question on a scale ranging from *not at all* (1) to *very much* (7).

Upon completion of the ratings of the stories, participants indicated their age, gender, and native language. Finally, they were informed about the purpose of the study and thanked for their participation in the experiment.

Dependent variable. The dispositional inference dependent variable was identical to that used in Study 1 and Study 2.

Results

Manipulation checks. Before analyzing participants' inferences, we checked the target gender and behavior stereotypicality manipulations embedded in the different stories that were used. The prototypicality question that served as our manipulation check was subjected to a 4 (story condition: 1, 2, 3, or 4) × 2 (participant gender: male vs. female) × 2 (target gender: male vs. female) × 2 (behavior stereotypicality: male vs. female) × 2 (linguistic abstraction: concrete vs. abstract) ANOVA; the last three variables were varied within participants. The analysis revealed the expected interaction effect between target gender and behavior stereotypicality, $F(1, 42) = 34.72$, $p < .001$. Simple main effects indicated that men behaving in a stereotypically male way ($M = 4.39$, $SD = 1.08$) were rated as significantly more prototypical than men behaving in a stereotypically female way ($M = 3.86$, $SD = 0.83$), $F(1, 42) = 11.51$, $p < .005$. Likewise, women behaving in a stereotypically female way ($M = 4.76$, $SD = 0.99$) were rated as significantly more prototypical than women behaving in a stereotypically male way ($M = 3.83$, $SD = 1.03$), $F(1, 42) = 46.52$, $p < .001$. The stereotype consistency of the behavior in the stories thus was manipulated successfully.

Dispositional inferences. The dispositional inferences made by participants on the basis of each of the eight stories also were subjected to a 4 (story condition: 1, 2, 3, or 4) × 2 (participant gender: male vs. female) × 2 (target gender: male vs. female) × 2 (behavior stereotypicality: male vs. female) × 2 (linguistic abstraction: concrete vs. abstract) ANOVA; the last three variables were varied within participants. The analysis revealed the expected main effect for linguistic abstraction, $F(1, 42) = 11.69$, $p < .001$. In general, the abstract stories ($M = 0.10$, $SD = 0.40$) led to stronger dispositional inferences than the concrete stories ($M = -0.10$, $SD = 0.42$). Importantly, this effect was not moderated by the content of the stories. That is, none of the other effects involving linguistic abstraction reached significance.

Interestingly, the analysis also revealed an interaction effect between target gender and behavior stereotypicality, $F(1, 42) = 6.59$, $p < .05$. Simple main effects revealed that stories about men behaving in a stereotypically male way ($M = -0.09$, $SD = 0.50$) led to somewhat weaker dispositional inferences than stories about men behaving in a stereotypically female way ($M = 0.06$, $SD = 0.48$), $F(1, 42) = 3.19$, $p < .09$. Likewise, stories about women behaving in a stereotypically female way ($M = -0.06$, $SD = 0.53$) led to somewhat weaker dispositional inferences than stories about women behaving in a stereotypically male way ($M = 0.09$, $SD = 0.45$), $F(1, 42) = 3.12$, $p < .09$. Stereotype-inconsistent stories resulted in stronger dispositional inferences than stereotype-consistent stories. The specific comparisons were, however, only marginally significant.

Discussion

Study 3 supports the assumption that subtle variations in linguistic abstraction may affect recipients' cognitive inferences independently of the specific content of a message. The results indicated that abstract information about a target gave rise to stronger dispositional inferences being made by recipients than concrete information about the same target engaging in the same behavior. Importantly, this effect was not moderated by the content of the information. That is, aside from linguistic abstraction, the only variation between messages was the stereotype consistency of the stories. This variable did not influence the effect of linguistic abstraction. This experiment thus provides direct evidence of the effect of differences in linguistic abstraction on recipients' dispositional inferences.

As Sigall and Mills (1998) argued, when there is doubt about the influence of a mediator, the best solution is to conduct an experiment in which the influence of the mediator on the dependent variable is tested directly by manipulating the proposed mediator. Study 3 provides exactly this test. With this study, important additional support is given to the claim made on the basis of Study 1 and Study 2. That is, linguistic abstraction is a significant mediating variable in the interpersonal transmission of stereotypical views.

Does message content come into play at all? It does. Irrespective of the effect attributable to linguistic abstraction, stereotype-inconsistent stories resulted in somewhat stronger dispositional inferences than stereotype-consistent stories. In this experiment, expectancy-inconsistent behavior would seem to have been more informative and diagnostic than expectancy-consistent information. Because the specific comparisons were only marginally significant, one should exercise caution in making inferences from these data. Nevertheless, these results seem to be in line with earlier attributional findings indicating that when people do not have much prior knowledge about a target, expectancy-inconsistent information may be more salient and more informative than expectancy-consistent information (e.g., Fiske & Neuberg, 1990; Jones & Davis, 1965; Stangor & McMillan, 1992). Note that in this experiment, the only prior knowledge that participants had was the target's name and, by implication, gender.

General Discussion

The research presented in this article focused on interpersonal aspects of stereotyping by subjecting to experimental scrutiny the

important role that language plays in the interpersonal transmission of stereotypical views and expectancies by means of the LEB. Two important aspects of this communication process were investigated: the transmission of stereotype-relevant messages by transmitters and the impact of these messages on recipients.

Step 1: Transmitting the LEB

First, in line with the LEB, strong support was found for the assumption that expected information is communicated at a higher level of abstraction than unexpected information. Whether participants generated their own stereotype-relevant behavioral examples based on gender stereotypes (Study 1) or passed on existing stereotype-relevant information about the Flemish or the Dutch (Study 2), in both cases expected information was communicated more abstractly than unexpected information. In line with the LIB research reported by Maass and colleagues (e.g., Maass et al., 1989, 1996), participants demonstrated a systematic bias in the language that they used to communicate stereotype-relevant information. They did so in a communication-like paradigm in which they were explicitly asked to communicate with another person using their own words. In most research performed on the LEB so far, participants were asked to choose between fixed descriptions of behavioral episodes (e.g., Maass et al., 1995). The finding that the LEB effect is also obtained when communicators use their own words strongly adds to the validity of this linguistic bias. Moreover, the LEB effect was obtained not only when communicators passed on carefully constructed, experimentally manipulated information (Study 2) but also when they communicated information based on their own personal experiences (Study 1). Our research empirically underpins Maass et al.'s (1989) suggestion that the linguistic bias phenomenon is not limited to the linguistic encoding of specific behavioral information but has important implications for the communication of (social) information in general.

Because no in-group threat manipulation was introduced in these studies, we found no support for the occurrence of the LIB. This result is in line with the results reported by Maass and colleagues for their studies of northern and southern Italians (Maass et al., 1995, Experiment 1, 1996, Experiment 2).

Step 2: Receiving the LEB

The primary goal of this research was to submit to experimental scrutiny the impact of messages with differences in linguistic abstraction attributable to the LEB effect on recipients. After all, from the interpersonal point of view advocated in this article, the impact of a linguistically biased message on a recipient may be considered at least as important to the communication process as the production of a biased message by a source (e.g., Berlo, 1960; Shannon & Weaver, 1949; Wiener, 1948). In fact, the whole question of the transmission of stereotypes from one person to another by means of a linguistic bias may be called into question if this bias is not found to influence recipients' inferences. Three experiments investigating the impact of stereotype-consistent and stereotype-inconsistent messages varying in linguistic abstraction on recipients were carried out. Study 1 and Study 2 involved a research procedure in which participants were asked to read and judge messages communicated by other participants. The results of these experiments indicated that expectancy-consistent stories led to stronger dispositional inferences by recipients than expectancy-inconsistent stories. Importantly, this effect was shown to be mediated by the level of abstraction of the messages. Study 3 provided a more direct test of the influence of differences in linguistic abstraction on recipients' inferences by experimentally manipulating the proposed mediator. Again, strong evidence for the impact of differences in linguistic abstraction on recipients' inferences was obtained.

Interestingly, evidence for the mediating role of linguistic abstraction was obtained not only in two experiments in which the content of the messages was fixed (Study 2 and Study 3) but also in an experiment in which the content varied across messages. Despite innumerable differences in content between the messages that were communicated in Study 1, significant evidence for the mediating effect of linguistic abstraction was found, indicating that differences in linguistic abstraction explained a significant portion of the variance in recipients' dispositional inferences. This mediational evidence suggests that the level of abstraction of the messages exerted an influence on recipients' dispositional inferences that went beyond the impact of the specific content or subject of the different messages.

This suggestion was confirmed by the results of Study 2. In this study, variations in content between the messages were controlled for by having all participants pass on information about the same behaviors. Again, significant evidence for the mediating effect of linguistic abstraction was obtained. Finally, in Study 3, not only the content of the messages but also every other aspect was controlled for. In this study, the level of abstraction was manipulated more directly. Again, linguistic abstraction exerted the expected effect on recipients' inferences. Taken together, the results of these studies provide convincing evidence for the assumption that differences in linguistic abstraction attributable to the LEB have significant interpersonal consequences. Importantly, evidence for this assumption was obtained not only under experimentally controlled conditions but also under less controlled conditions with spontaneous language use.

As noted before (e.g., Hamilton et al., 1992; Maass & Arcuri, 1996; Stangor & Schaller, 1996), relatively little experimental attention has been paid to the interindividual aspects of stereotyping. However, in line with the suggestions of Maass et al. (1989) and other more recent findings on the interpersonal nature of social stereotypes (Harasty, 1997; Ruscher & Duval, 1998), our results clearly indicate that stereotypes and expectancies are generated and maintained not only within an individual but also transmitted and maintained between individuals, with language serving as an important mediator. In particular, the finding that linguistic abstraction mediated the differences in recipients' dispositional inferences seems to be of importance in this respect, because it is this linguistic variable that distinguishes our results from the more general, intraindividual attributional finding that stereotype-consistent information may lead to more dispositional and less situational attributions than stereotype-inconsistent information (e.g., Bell et al., 1976; Hewstone, 1990; Jackson et al., 1993; Macrae & Shepherd, 1989).

Conclusions

The studies reported here provide converging evidence for the argument that language plays a subtle but crucial role in the interpersonal transmission of stereotypes. The linguistic bias that a transmitter displays in his or her communication is shown to

systematically influence the types of inferences that a recipient makes. In that sense, the studies that we report support the untested assumption advanced by Maass et al. (1995, 1989) that subtle but strategic language choices in the representation of an event are significant contributors to how a stereotype is transmitted. Moreover, our findings clearly indicate that the study of interindividual aspects of stereotyping may form an important extension of the existing predominantly intraindividual focus on stereotypes and expectancies (e.g., Fiske & Taylor, 1991; Hamilton, 1981; Markus & Zajonc, 1985).

One of the interesting implications of this work is how such subtle linguistic strategies may lead to undetected or undetectable forms of discrimination in everyday life. The types of linguistic biases examined here appear to be implicit (Franco & Maass, 1996; Semin & de Poot, 1997; von Hippel, Sekaquaptewa, & Vargas, 1997). In contrast to direct or blatant forms of discrimination, the type of linguistic bias that is involved in the transmission of stereotypes remains difficult to access. Consequently, it is unlikely or at least difficult for a recipient of such messages to identify the precise nature of the discrimination. In that sense, this research opens new avenues toward not only understanding how cultural stereotypes are maintained but also explaining why they are so difficult to change.

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